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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 10/609,065 | 06/26/2003 | Venkat Selvamanickam | SPP 18.807 | 6927 |
| 26304 | 7590 | 08/25/2004 | | |
| KATTEN MUCHIN ZAVIS ROSENMAN 575 MADISON AVENUE NEW YORK, NY 10022-2585 | | | EXAMINER MCDONALD, RODNEY GLENN | |
| | | | ART UNIT | PAPER NUMBER |
| | | | 1753 | |
| DATE MAILED: 08/25/2004 | | | | |

Please find below and/or attached an Office communication concerning this application or proceeding.

| | | | |
|------------------------------|---------------------------------------|---|--|
| Office Action Summary | Application No. 10/609,065 | Applicant(s) SELVAMANICKAM ET AL. S.C. | |
| | Examiner Rodney G. McDonald | Art Unit 1753 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If no period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-32 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-32 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. ____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date <u>12/16/02</u> | 6) <input type="checkbox"/> Other: ____ |

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 2, 6 and 8 are rejected under 35 U.S.C. 102(b) as being anticipated by Kuehnle (U.S. Pat. 3,884,787).

Kuehnle teach in Fig. 2 ***a reel 68 representing an elongated substrate member 70 which is to be coated within the vessel 52.*** (Column 8 lines 25-27)

The substrate member 70 passes through a pressure tight passageway 72 also formed in the closure 54 to the interior of the vessel 52 and is guided, as for example, by roller means 74 to engage upon the cylindrical surface of the drum 58. For purposes of explanation, the substrate is shown lying on the surface of the drum 58 in four open loops 76, the configuration being helical so that the substrate member passes onto the drum 58 on the left and passes off the surface of the drum 58 on the right. ***This is a tortuous path of convoluted type, specifically helical.*** Passage of the now-coated substrate member 78 is guided by roller means 80 to pass through another pressure-tight passageway 82 in the end wall of the vessel 52 to ***a pickup device such as a reel 84 driven by a motor 886. Obviously, the source 68 and the take-up device 84 can be***

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parts of a continuous production line extending over a much greater space than shown with suitable guiding and other processing means. (Column 8 lines 50-68)

In FIG. 2 a cylindrical drum is illustrated at 58 by means of dashed lines, the drum being connected to a shaft 60 that passes through the closure 54 by way of a pressure-tight structure which is illustrated by the symbol 62. (Column 8 lines 1-5)

The passageway 62 of FIG. 2 is required to permit rotation of the shaft 60 from the vessel 52 by means of the motor 64 and may also be required to carry electrical wires, ***coolant conduits*** and the like through the interior of the shaft 60 which preferably is hollow. Symbolically, the lead 66 to ground represents one type of electrical conductor which passes through the passageway 62, albeit internally of the shaft 60. (Column 8 lines 17-24)

The reference character 88 represents ***a target*** which is cylindrically segmented and surrounding the drum 58, as taught in said second copending application Ser. No. 322,968, spaced from said drum to establish a plasma vapor. According to the preferred structure, the target 88 is energized by a high voltage electrical energy source 90 by way of suitable connections indicated generally at 92 that pass through the wall of the vessel 52 by way of another pressure-tight passageway 94. (Column 9 lines 42-51)

According to a phenomenon which is well known, ionization of an inert noble gas such as ***argon*** introduced from a source 96 through-tight passageway 98 into the interior of the vessel 52 provides ions that will strike the target 88 and

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knock off atoms driven thereafter to the surface of the substrate loops 76 coating the same. There may be **dopant gas and/or gas replenishment oxygen, for example, also introduced by way of the pressure-tight passageway 98.**

Certain oxide targets may lose oxygen at a faster rate than the metal of the oxide. None of the electrical cooling or measuring connections to the interior of the vessel 52 are shown in FIG. 2, nor is the means for driving secondary electrons from the space 100 illustrated in order to keep the view as simple as possible. (Column 9 lines 64-68; Column 10 lines 1-10)

In the case of multiple revolution methods the substrate additionally is subjected to repeat exposures in the segments along the length of the target, that is from left to right in Fig. 2, for example. This tends to apply a uniform coating of the thin film on the exposed surfaces of the substrate member 70. (Column 10 lines 23-29)

Typically the chamber is pumped down to a pressure on the order of 10^{-7} torr. (Column 13 lines 33-34)

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that

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the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary.

Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1-4, 6, 8, 16, 17 and 32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kuehnle (U.S. Pat. 3,884,787) in view of Saida et al. (U.S. Pat. 4,763,601).

Kuehnle is discussed above and all is as applies above. (See Kuehnle discussed above)

The differences between Kuehnle and the present claims is that where the substrate is a metal substrate is not discussed, where the coating is a biaxially-textured buffer layer for a high temperature superconducting material, and where the deposition chamber comprises a deposition zone and one coating modification zone.

Zhang et al. teach utilizing wires or tapes comprising a buffer layer, superconducting coating, and a cap layer. (Column 4 lines 43-50) The substrate can be formed of alloys having one or more surfaces that are biaxially textured or cube textured. In certain embodiments, the substrate is a binary alloy that contains two of the following metals: copper, nickel, chromium, vanadium,

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aluminum, silver, iron, palladium, molybdenum, gold and zinc. (Column 5 lines 7-15)

The buffer layer can be formed using an ion beam assisted deposition (IBAD). In this technique, a buffer layer material is evaporated using, for example, electron beam evaporation, sputtering deposition, or pulsed laser deposition while an ion beam (e.g., an argon ion beam) is directed at a smooth surface of a substrate onto which the evaporated buffer layer is deposited. (Column 6 lines 15-21)

The motivation for utilizing a metal substrate is that it allows for producing dense, highly textured metal oxide films. (Column 2 lines 15-16)

The motivation for utilizing a biaxially-textured buffer layer for a high temperature superconducting material is that it allows for producing dense, highly textured metal oxide films. (Column 2 lines 15-16)

The motivation for utilizing a deposition chamber comprising a deposition zone and a coating modification zone is that it allows for producing a biaxially oriented film. (Column 6 lines 15-21)

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified Kuehnle by utilizing a metal substrate, utilizing a coating that is a biaxially-textured buffer layer for a high temperature superconducting material, and utilizing a deposition chamber comprising a deposition zone and one coating modification zone as taught by Zhang et al. because it allows for producing dense, highly textured metal oxide films and for producing a biaxially oriented film.

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Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kuehnle in view of Zhang et al. as applied to claims 1-4, 6, 8, 16 and 17 above, and further in view of Mario et al. (U.S. Pat. 4,562,093).

The difference not yet discussed is the use of a movable shutter to control deposition.

Mario et al. teach movable shutters to control range of deposition from the sputter target. (Column 9 lines 1-11)

The motivation for utilizing movable shutters is that it allows for control of deposition from the sputtering source. (Column 9 lines 1-11)

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have utilized a movable shutter as taught by Mario et al. because it allows for control of deposition from the sputtering source.

Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kuehnle in view of Zhang et al. as applied to claims 1-4, 6, 8, 16 and 17 above, and further in view of Kuehnle (U.S. Pat. 3,829,373).

The difference not yet discussed is the different coating deposited in each deposition zone.

Kuehnle '973 teach that different targets can be utilized to deposit different materials by utilizing different bars of materials. (Column 7 lines 46-50)

The motivation for utilizing different targets is that it allows deposition of different materials. (Column 7 lines 46-50)

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have utilized different targets as taught by Kuehnle '973 because it allows deposition of different materials.

Claims 9-13 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kuehnle (U.S. Pat. 3,884,787) in view of Saida et al. (U.S. Pat. 4,763,601).

Kuehnle is discussed above and all is as applies above. (See Kuehnle discussed above)

The differences between Kuehnle and the present claims is utilizing a second deposition chamber, utilizing a T-tube, the dimensions of the T-tube, the second chamber being sputtering, and the sputtering being RF magnetron sputtering.

Kuehnle recognize that his chamber can be part of a continuous production line extending over a much greater space than shown with a suitable guiding and other processing means. (Column 8 lines 65-68)

Saida et al. recognize that for coating a strip of material coating zones can be arranged between the strip supply and take up devices. (See Abstract) The coating zones can include sputtering zones, which can include radio frequency sputtering with a magnetic field. (Column 3 lines 43-51) The chamber can slits (i.e. T-tubes) so sized and designed to allow the strip to pass there through and to maintain a desired vacuum level within each zone. (Column 2 lines 54-57)

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As to the dimensions of the T-tubes it is believed that Applicant's dimension would be met so long as the appropriate vacuum was maintained.

(See T-tubes discussed above)

The motivation for utilizing a second deposition chamber, utilizing a T-tube or particular dimension, utilizing a second chamber for sputtering, and utilizing RF magnetron sputtering is that it allows for deposition of a coating layer having excellent properties. (See abstract)

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified Kuehnle by utilizing a second deposition chamber, utilizing a T-tube or particular dimension, utilizing a second chamber for sputtering, and utilizing RF magnetron sputtering as taught by Saida et al. because it allows for deposition of a coating layer having excellent properties.

Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kuehnle in view of Saida et al. as applied to claims 9-13 and 15 above, and further in view of Mario et al. (U.S. Pat. 4,562,093).

The difference not yet discussed is the use of a shutter.

Mario et al. is discussed above and all is as applies above. (See Mario et al. discussed above)

The motivation for utilizing a shutter is that it controls deposition. (See Mario et al. discussed above)

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Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have utilized a shutter as taught by Mario et al. because it allows for controlling deposition.

Claims 18-24, 26, 27 and 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kuehnle (U.S. Pat. 3,884,787) in view of Zhang et al. (U.S. Pat. 6,673,387) and Saida et al. (U.S. Pat. 4,763,601).

Kuehnle is discussed above and all is as applies above. (See Kuehnle discussed above)

The differences between Kuehnle and the present claims is that depositing a buffer layer is not discussed, utilizing a second deposition chamber is not discussed, utilizing a T-Tube of particular dimension is not discussed, residence time in the deposition chambers is not discussed, the substrate being metal is not discussed and where the sputtering in the second deposition chamber is carried out by RF magnetron sputtering.

Zhang et al. is discussed above and teach the buffer layer deposition and the substrate being metal. (See Zhang et al. discussed above)

The motivation for utilizing a buffer layer and a metal substrate is that it allows for deposition of a biaxially textured film. (See Zhang et al. discussed above)

Saida et al. is discussed above and teach multiple deposition chambers arranged after each other, utilizing a T-tube of particular dimensions, and sputtering with RF power and a magnetron. (See Saida et al. discussed above)

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The motivation for utilizing multiple deposition chambers arranged after each other, utilizing a T-tube of particular dimensions, and sputtering with RF power and a magnetron is that it allows for deposition of a coating layer having excellent properties. (See Saida et al. discussed above)\

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified Kuehnle by utilizing a buffer layer and a metal substrate as taught by Zhang et al. and to have utilized multiple deposition chambers arranged after each other, utilized a T-tube of particular dimensions, and utilized sputtering with RF power and a magnetron as taught by Saida et al. because it allows for deposition of a biaxially textured film and allows for deposition of a coating layer having excellent properties.

Claim 25 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kuehnle in view of Zhang et al. and Saida et al. as applied to claims 18-24, 26, 27, and 29 above, and further in view of Mario et al. (U.S. Pat. 4,562,093).

The difference not yet discussed is the use of movable shutters.

Mario et al. is discussed above and all is as applies above. (See Mario et al. discussed above)

The motivation for utilizing movable shutters is that it allows for controlling the deposition of the thin film. (See Mario et al. discussed above)

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have utilized movable shutters as taught by Mario et al. because it allows for controlling the deposition of the thin film.

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Claims 28, 30 and 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kuehnle in view of Zhang et al. and Saida et al. as applied to claims 18-24, 26, 27 and 29 above, and further in view of Kuehnle (U.S. Pat. 3,829,373).

The difference not yet discussed is the deposition of different coatings in different deposition zones.

Kuehnle is discussed above and teach depositing different coating materials in different deposition zones. (See Kuehnle discussed above)

The motivation for utilizing different coating materials in different deposition zones is that it allows for depositing different coatings. (See Kuehnle discussed above)

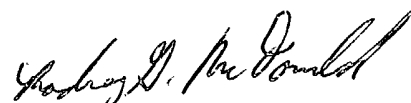
Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have utilized different coating materials as taught by Kuehnle because it allows for depositing different coatings.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Rodney G. McDonald whose telephone number is 571-272-1340. The examiner can normally be reached on M- Th with Every other Friday off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nam X. Nguyen can be reached on 571-272-1342. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Rodney G. McDonald
Primary Examiner
Art Unit 1753

RM
August 18, 2004